

STATEMENT OF THE CLAIMS

1. (currently amended) An apparatus for cosmetic reduction of wrinkles on a superficial area of mammalian skin, the apparatus comprising a radiation delivery system for delivering electromagnetic radiation of a light wavelength to the skin, the radiation delivery system including:

- _____ i) a pulsation system for pulsing the radiation delivered according to a predetermined regime wherein each pulse has a duration substantially in the range of 10 μ sec to 10msec and a pulse energy rise time substantially at or below 200 μ sec, and
- _____ ii) a control system arranged to permit the energy density of the radiation delivered to the skin to be varied within the range 0.5 J/cm² to 5 J/cm² per pulse, the control system being arranged to inhibit selection of an energy density substantially above 5 J/cm² per pulse; and

the apparatus being ~~intended to be~~ configured such that the radiation delivered to the skin is of a predetermined monochromatic wavelength or a narrow wavelength bandwidth substantially in the range of 500nm - 850nm ~~and pulse energy rise time substantially at or below 200 μ sec.~~

2. (previously presented) The apparatus according to claim 1, wherein the pulse energy rise time is substantially in the range of 50 μ s to 150 μ s.

3 (cancelled)

4. (currently amended) The apparatus according to claim 1, wherein the energy pulse duration is substantially at or below 10ms ~~100ms~~.
5. (previously presented) The apparatus according to claim 4, wherein the energy pulse duration is substantially at or below 2ms.
6. (previously presented) The apparatus according to claim 5, wherein the energy pulse duration is substantially at or below 200 μ s.
7. (currently amended) An apparatus for cosmetic reduction of wrinkles on superficial mammalian skin, the apparatus comprising a radiation delivery system for delivering substantially monochromatic radiation, said radiation being in a wavelength bandwidth of substantially 15nm or less and in at least one of the ranges of 570nm to 600nm and 750nm to 850nm, the delivery system including the radiation delivery system including:
- _____ i) a pulsation system for pulsing the radiation delivered according to a predetermined regime wherein each pulse has a duration substantially in the range of 10 μ sec to 10msec and a pulse energy rise time substantially at or below 200 μ sec; and
- _____ ii) a control system arranged to permit the energy density of the radiation delivered to the skin to be varied within the range 0.5 J/cm² to 5 J/cm² per pulse, the control system being arranged to inhibit selection of an energy density substantially above 5 J/cm² per pulse in which the radiation delivered to the skin has an energy density substantially at or below 5J/cm² per pulse.

8. (previously presented) The apparatus according to claim 7, wherein the radiation delivery system is set up to deliver substantially monochromatic radiation in a bandwidth of substantially 15nm or less substantially in at least one of the ranges of 577nm to 585nm and 800nm to 815nm.

9. (previously presented) The apparatus according to claim 7, wherein the radiation delivery system is set up to deliver radiation in a concentrated beam having a cross section with a substantially uniform energy distribution across said beam cross section.

10. (currently amended) The apparatus according to claim 7, wherein the radiation delivery system is set up to deliver radiation in a concentrated beam having a diameter substantially in the range of 1mm to 10mm.

11. (previously presented) The apparatus according to claim 7, wherein the radiation delivery system comprises a laser radiation delivery system.

12. (previously presented) The apparatus according to claim 11, wherein the laser radiation delivery system comprises a dye laser radiation delivery system.

13. (previously presented) The apparatus according to claim 12, wherein the dye laser radiation delivery system comprises a flashlamp pumped dye laser including a pulse forming network arranged to pulse the laser according to the predetermined pulse regime.

14. (previously presented) The apparatus according to claim 11, wherein the laser radiation delivery system comprises a semiconductor laser radiation delivery system.

15. (previously presented) The apparatus according to claim 1 or claim 7, wherein the radiation delivery means includes a broad band radiation emitting device.

16. (previously presented) The apparatus according to claim 12, wherein the radiation delivery means includes at least one radiation filter arranged to filter radiation to permit the substantially monochromatic (or narrowed bandwidth) radiation to be delivered to the skin.

17-18 (cancelled)

19. (previously presented) The apparatus according to claim 1 or claim 7, which includes an optical arrangement for focusing the radiation beam.

20. (previously presented) A method of cosmetically reducing wrinkles from a superficial area of mammalian skin tissue having, in the order specified, an epidermal layer, a basal layer, and a dermal layer, which method comprises irradiating said dermal layer through

said basal layer by means of visible or infra-red radiation, said irradiation being selected to be absorbed by a chromophore in targeted capillaries present in said dermal layer, the targeted capillaries having fenestrations permitting transfer of inflammatory mediators through the capillary wall upon selective heating to a threshold level, while said basal layer remains intact so as to substantially inhibit contact of said dermal layer with ambient air, said irradiation being pulsed and having:

- i) an energy density of substantially 5 J/cm² or less; and/or,
- ii) energy pulse rise time substantially at or below 200 μ s.

21. (previously presented) A method according to claim 20, wherein the irradiation is from a substantially monochromatic radiation source in a bandwidth or substantially 15nm or less.

22. (previously presented) A method according to claim 21, wherein said irradiation is from a coherent radiation source.

23. (previously presented) A method according to claim 22, wherein the source comprises a ruby laser arranged to target the dermis.

24. (previously presented) A method according to claim 22, wherein the source comprises a dye laser of wavelength selected to target oxyhemoglobin present in blood vessels in said dermal layer.

25. (previously presented) A method according to claim 22, wherein the source comprises a dye laser, a ruby laser, or a semiconductor laser which scans said area of mammalian skin tissue.

26. (previously presented) A method according to claim 20, wherein the pulse energy rise time is substantially in the range of $50\mu\text{s}$ to $150\mu\text{s}$.

27. (previously presented) A method according to claim 20, wherein the energy pulse duration is substantially at or below 100ms.

28. (previously presented) A method according to claim 27, wherein the energy pulse duration is substantially at or below 2ms.

29. (previously presented) A method according to claim 28, wherein the energy pulse duration is substantially at or below $200\mu\text{s}$.

30. (currently amended) A method according to claim 20, in which said superficial area of mammalian skin tissue is treated with an artificial chromophore which is absorbed into the dermal layer and which permeates through the basal layer for delivery to the dermal layer so that irradiation can be absorbed.

31. (previously presented) A method according to claim 30, wherein the artificial chromophore is applied to the epidermal layer in the form of a liposome-containing topical formulation.